NEB-241-PCT.ST25.txt
SEQUENCE LISTING

<110> New England Biolabs, Inc.
      Morgan, Richard
      Wilson, Geoffrey
      Lunnen, Keith
      Heiter, Daniel
      Benner, Jack
      Nfenfou, Celine
      Picone, Stephen

<120> A Novel Modular Type II Restriction Endonuclease, CspCI, and the
      Use of Modular Endonucleases for Generating Endonucleases with
      New Specificities

<130> NEB-241-PCT

<150> 60/555,796
<151> 2004-03-24

<160> 49

<170> PatentIn version 3.2

<210> 1
<211> 61
<212> DNA
<213> unknown

<220>
<223> synthetic

<220>
<221> misc_feature
<222> (12)..(12)
<223> n=a,c, g or t

<400> 1
ccccgaaaag tnccacctga cgtgcaacct aggtggcacg tctaagaaac cattattatc   60

a   61

<210> 2
<211> 61
<212> DNA
<213> unknown

<220>
<223> synthetic

<220>
<221> misc_feature
<222> (14)..(14)
<223> n=a,c, g or t

<400> 2
tgataataat ggtntcttag acgtgccacc taggttgcac gtcaggtggc acttttcggg   60

g   61

Page 1

NEB-241-PCT.ST25.txt

```
<210>   3
<211>   61
<212>   DNA
<213>   unknown

<220>
<223>   synthetic


<220>
<221>   misc_feature
<222>   (12)..(12)
<223>   n=a,c,t or g

<400>   3
ccccgaaaag tnccacctga cgtgccaccc gggttgcacg tctaagaaac cattattatc      60

a                                                                      61



<210>   4
<211>   61
<212>   DNA
<213>   unknown

<220>
<223>   synthetic


<220>
<221>   misc_feature
<222>   (14)..(14)
<223>   n-a,c,g or t

<400>   4
tgataataat ggtntcttag acgtgcaacc cgggtggcac gtcaggtggc acttttcggg      60

g                                                                      61



<210>   5
<211>   4616
<212>   DNA
<213>   unknown

<220>
<223>   Citrobacter species 2144

<400>   5
agatctgcca atactgtttc gacagcgcca cttaattcct tcaatttcgc gcaggttaga      60

tggcacttgt tcggaagagg cgtctgtaac tcggtctcaa gctgcgggat tgccccggta     120

ttttgctcat ccccttttaa ttcaacgatc atctgctgaa aagtcagacc ctcacgatag     180

tcagaggcca gcttctgttc ctcagatgcc agccctttca gatcggtctt acccgtctct     240

agttgttggg ttgccccatc aagagtgcgg cgtttttctg ccaattgagt agcttttaca     300

cccgtcagat cgatatatct ggcatcaatc gccgaagtaa aatttcggac aaaatcatta     360

aatgcatcca gcccaaataa cgttgagata agttcagtct gtcttgccgg ggccagcgcc     420
```

NEB-241-PCT.ST25.txt

```
gctattcttg agaagttgtc aattcggttt ttttcaacaa agcaaaagcg gtgctgtgct    480

tcgttatgct caattgctaa atcctgtcct tgctctccta cgccagtaat tacaggtgca    540

gaaaactgat cgacatgtgc atttctaaaa tagtcggttt gattacgaaa acgcttacta    600

tcagcctcag ctacgctacc cagtaatgta tattcaagcg cttcgcagaa actggacttc    660

ccggtaccat tggggccata aatcagcacc agacgcgaat ccaggtcaaa ttcctcctgt    720

ctggcaaatc ctctgaacgg tccaacggac aacctcctga gtcgattgaa agtggagacg    780

cgttcgttgc tttgttcagg cagtggctgg acttccaggc tgagggtatc ccaggcaggt    840

tgcgccagat cgacgatacg ccttatccgc tgtccctgtg aggtacctaa cgggataata    900

ttatccagat tatcccatac aagattcgcc atttttctga catcaccggg tatatctgct    960

gtgtctaaag tttggaaaaa gcgtaaaaac tcgttactga gcattatgaa tcctttttta   1020

cttgtcgttt tctcacgtta taagacaatg ataaaagata cactcttagc taacgtattc   1080

acgtgatctg tagatcaatt atcttcagtt ccgctctcaa gctgaactga accgggatga   1140

agacggtatg gcgcttgcca cactagtaca ggtgtattac taaaaaaccg aaaggtattc   1200

gataaagccg attacaacgc gttggtggac aacaccgaag ccacgctcgg cgatgaactg   1260

gtggcaaaga aagaaatgca ggtccgccgg gagtaaacgt ccaccttcat caagccgatg   1320

gatgagcagg cgtaatatgt cgcagtgctt gcgaagcgcc gtactccgga tgtgcgcaag   1380

aacgactgac gtctggtact gagccgtgac gatctggcct ctgatgggcc cgcattaatg   1440

agatggtaaa tcctcactaa tattgaaggc aaaaaataaa ggtctccaaa atcgactctt   1500

gtaaagaggc ttgcgaggcc ctcctgcact ctagccatag ttcggaattg gtcgttaaaa   1560

tgtcgtacac taccatcatt ttaaaatcga aatggaatat tgaatggcga acgaacgcaa   1620

aacagaatcc ttagttcgag accagctacg gacatttggc tactacgaac cggacaacgg   1680

catttctgta gaggagcaaa agtccgagat tgtcaagatt aagggtttgc tttcaaaagc   1740

aagtaagaac gccaagggca atattggtta tcccgagttc atcatctcta accggaaaga   1800

tactgcattc ctgatagttg tggagtgcaa gccggatgtg aaaaagcacg agagcccaag   1860

ccgtgataag ccggtagact atgcggtgga tggcgttctc cactacgcca gacacctagc   1920

caagcactat accgtattgg cggtggctgt gagcggcacg acggcaagtt ctatgaaggt   1980

gtccaacttc cttgtgcctg cgggtaccac ggatgtgaag gcgctggtca acgagagtaa   2040

ttcctcagtt gccgaattgg tgccttatga tgactactac cgcctggcgt cttatgatcc   2100

ggatgttgct cagaagcgcc actctgactt gctggcgttc tcacgcgagc tgcacgagtt   2160

tatttggacg aaggcaaaaa tctccgaaga agaaaagcct ctgctggtga gtgggacctt   2220

gattgcgttg atgaacaaca cattcatcaa gacctttgac gctctacctg cagaagatgt   2280
```

NEB-241-PCT.ST25.txt

```
gcaggaagcg tggctgacgg ctatcaagaa ggagctggac aaagcttcta tcccccaggc   2340

caagaaggac acgatgctgc agccgtatac gacgattgcg gttaatccca atcttggcaa   2400

gcctgacagc aagacggcta aagagtatcc agatggagtt ttcaaggaaa taatcacccg   2460

catcgccgac aacgtctggc cctacatcaa tgtctttcac gactttgatg tggtcggaca   2520

attctacggt gagtttctga aatatactgc gggcgacaaa aaagcgctgg gcatcgtgct   2580

gacgccgcgc catgtggctg aactgttctc gctcatcgcc aacgttaacc ccaagtctaa   2640

ggtgctggac atctgtgcgg gcacgggcgg ctttctcatc tcggccatgc aacacatgct   2700

caagaaggcc gtaacggaca aagagcgcaa cgacatcaag caaaatcggc tcatcgggat   2760

tgaaaacaac cccaagatgt ttgccttggc tgccagcaac atgattctgc gtggtgatgg   2820

taaggctaac ctgcaccagg ccagttgctt tgataatgca gtgattgcgg ccgtgcagaa   2880

gatgaagccc aacgtgggca tgcttaaccc cccgtattcg cagtccaaga gcgacgcgga   2940

actgcatgag ctgtatttcg tcaagcaaat gctcgacacg cttacaccag gtggagttgg   3000

tatcgcgatt gttcccatgt caagcgccat ctcgcccaac ccaatgcgtg aagagctgat   3060

gaagtaccac tcactggatg cggtcatgtc aatgccccag gagctgtttt atccagtggg   3120

cacggtcacc tgtgtcatgg tctggattgc cggtgtgcca catgagcaaa tgtccaagaa   3180

gacatggttt ggctactggc gcgacgatgg ctttgtgaaa accaagcata aggggcgcat   3240

cgacatgaat ggcacctggc cagacatccg tgaccgatgg attgaaatgt atcgcaatcg   3300

cgaagtgcat gctggcgaga gcatcatgca gaaggtaggc cccgatgatg aatggtgcgc   3360

tgaagcctat atggaaacgg actactcagt gctgactcag tccgactttg agaaggtcgt   3420

tcaaagctac gcgctatttta aactatttgg tcaaggcagt agccagtccg aagtgaaagg   3480

ggcaacggat gccgaagatt aacgaccttt ttcatctgga gtacggtcac agcctggagt   3540

tgaaccggct agagcaatcc acagcagccg atgccgtcaa cttcgttgga cgggcagcta   3600

ggaacaatgg agtcaccgca cgcgtggctc cccctccaaa cttgaaaccg gcagccgcag   3660

gcaccatcag cgtagcgctg ggagggcaag gtggcgcagg agtcgccttc ctccaaccgc   3720

gtccctactt ttgtggccgc gatgtgatgg tgctgacccc caagaagcac atgacagacc   3780

aagaaaagct gtggtgggtc atgtgcatca cagccaaccg tttccgcttt ggatttggtc   3840

gccaagctaa tcggacgcta aaggacttga atctgcctgc gccccaaaaa actccaagct   3900

gggtgcatac agcgaacccc gatgcctacc aaggtgtcag gtcccccgca agtgttcatc   3960

cagtcggcac gctggctgtg agcaactgga aggctttcat tcttcaagac ttgtttacca   4020

tccgtaaagg acagcgactc accaaggcca acatgttgcc cggtacggtg ccctacatcg   4080

gcgcatcgga cacttccaac ggcgttactg cgcacatcgg gcaaaaacca atccacgagg   4140

gcggcaccat cagcgtcaca tatgacggtt caatagctga agcgttttac cagccctccc   4200
```
                                    Page 4

NEB-241-PCT.ST25.txt

```
cattttgggc atcggatgct gtgaacgtgc tctatcccaa gggtttcaca ctcacaccgg    4260

ccactgcctt gtttatctgc gcaatcatca ggatggagaa atatcgcttc aactatggcc    4320

gaaaatggca cttagagcgt atgcgagaga cagttatcag gttaccagct actgcaacag    4380

gtgcaccaga ttgggacttt atggagaaat acatcaaaac tttgccctat agctcgcagt    4440

tgcaataatc atggctgatt tcctaaattt cctgccgcat ctacgggtat tgcatgttca    4500

ggacggtggt gatcatcgct aggtggaggc ggaaagccgt gttttgctga ccgcttgccc    4560

ggcctgcggt gaaaagcctt cccattcagg gaaggcttta atcgagttat agatct       4616
```

```
<210>   6
<211>   1899
<212>   DNA
<213>   unknown

<220>
<223>   restriction and modification system of Citrobacter species 2144

<400>   6
atggcgaacg aacgcaaaac agaatcctta gttcgagacc agctacggac atttggctac      60

tacgaaccgg acaacggcat ttctgtagag gagcaaaagt ccgagattgt caagattaag     120

ggtttgcttt caaaagcaag taagaacgcc aagggcaata ttggttatcc cgagttcatc     180

atctctaacc ggaaagatac tgcattcctg atagttgtgg agtgcaagcc ggatgtgaaa     240

aagcacgaga gcccaagccg tgataagccg gtagactatg cggtggatgg cgttctccac     300

tacgccagac acctagccaa gcactatacc gtattggcgg tggctgtgag cggcacgacg     360

gcaagttcta tgaaggtgtc caacttcctt gtgcctgcgg gtaccacgga tgtgaaggcg     420

ctggtcaacg agagtaattc ctcagttgcc gaattggtgc cttatgatga ctactaccgc     480

ctggcgtctt atgatccgga tgttgctcag aagcgccact ctgacttgct ggcgttctca     540

cgcgagctgc acgagtttat ttggacgaag gcaaaaatct ccgaagaaga aaagcctctg     600

ctggtgagtg ggaccttgat tgcgttgatg aacaacacat tcatcaagac ctttgacgct     660

ctacctgcag aagatgtgca ggaagcgtgg ctgacggcta tcaagaagga gctggacaaa     720

gcttctatcc cccaggccaa gaaggacacg atgctgcagc cgtatacgac gattgcggtt     780

aatcccaatc ttggcaagcc tgacagcaag acggctaaag agtatccaga tggagttttc     840

aaggaaataa tcacccgcat cgccgacaac gtctggccct acatcaatgt ctttcacgac     900

tttgatgtgg tcggacaatt ctacggtgag tttctgaaat atactgcggg cgacaaaaaa     960

gcgctgggca tcgtgctgac gccgcgccat gtggctgaac tgttctcgct catcgccaac    1020

gttaacccca agtctaaggt gctggacatc tgtgcgggca cgggcggctt tctcatctcg    1080

gccatgcaac acatgctcaa gaaggccgta acggacaaag agcgcaacga catcaagcaa    1140
```

NEB-241-PCT.ST25.txt

```
aatcggctca tcgggattga aaacaacccc aagatgtttg ccttggctgc cagcaacatg   1200

attctgcgtg gtgatggtaa ggctaacctg caccaggcca gttgctttga taatgcagtg   1260

attgcggccg tgcagaagat gaagcccaac gtgggcatgc ttaaccccccc gtattcgcag   1320

tccaagagcg acgcggaact gcatgagctg tatttcgtca agcaaatgct cgacacgctt   1380

acaccaggtg gagttggtat cgcgattgtt cccatgtcaa gcgccatctc gcccaaccca   1440

atgcgtgaag agctgatgaa gtaccactca ctggatgcgg tcatgtcaat gccccaggag   1500

ctgtttttatc cagtgggcac ggtcacctgt gtcatggtct ggattgccgg tgtgccacat   1560

gagcaaatgt ccaagaagac atggtttggc tactggcgcg acgatggctt tgtgaaaacc   1620

aagcataagg ggcgcatcga catgaatggc acctggccag acatccgtga ccgatggatt   1680

gaaatgtatc gcaatcgcga agtgcatgct ggcgagagca tcatgcagaa ggtaggcccc   1740

gatgatgaat ggtgcgctga agcctatatg gaaacggact actcagtgct gactcagtcc   1800

gactttgaga aggtcgttca aagctacgcg ctatttaaac tatttggtca aggcagtagc   1860

cagtccgaag tgaaaggggc aacggatgcc gaagattaa                         1899
```

```
<210>  7
<211>  960
<212>  DNA
<213>  unknown

<220>
<223>  specificity subunit of Citrobacter species 2144

<400>  7
atgccgaaga ttaacgacct ttttcatctg gagtacggtc acagcctgga gttgaaccgg   60

ctagagcaat ccacagcagc cgatgccgtc aacttcgttg gacgggcagc taggaacaat   120

ggagtcaccg cacgcgtggc tccccctcca aacttgaaac cggcagccgc aggcaccatc   180

agcgtagcgc tgggagggca aggtggcgca ggagtcgcct tcctccaacc gcgtccctac   240

ttttgtggcc gcgatgtgat ggtgctgacc cccaagaagc acatgacaga ccaagaaaag   300

ctgtggtggg tcatgtgcat cacagccaac cgtttccgct ttggatttgg tcgccaagct   360

aatcggacgc taaaggactt gaatctgcct gcgcccaaa aaactccaag ctgggtgcat   420

acagcgaacc ccgatgccta ccaaggtgtc aggtccccccg caagtgttca tccagtcggc   480

acgctggctg tgagcaactg gaaggctttc attcttcaag acttgtttac catccgtaaa   540

ggacagcgac tcaccaaggc caacatgttg cccggtacgg tgccctacat cggcgcatcg   600

gacacttcca acggcgttac tgcgcacatc gggcaaaaac caatccacga gggcggcacc   660

atcagcgtca catatgacgg ttcaatagct gaagcgtttt accagccctc cccattttgg   720

gcatcggatg ctgtgaacgt gctctatccc aagggtttca cactcacacc ggccactgcc   780

ttgtttatct gcgcaatcat caggatggag aaatatcgct tcaactatgg ccgaaaatgg   840
```
Page 6

NEB-241-PCT.ST25.txt

cacttagagc gtatgcgaga gacagttatc aggttaccag ctactgcaac aggtgcacca   900

gattgggact ttatggagaa atacatcaaa actttgccct atagctcgca gttgcaataa   960

```
<210>  8
<211>  632
<212>  PRT
<213>  unknown

<220>
<223>  predicted amino acid sequence of restriction modification system
       of Citrobacter species 2144

<400>  8
```

Met Ala Asn Glu Arg Lys Thr Glu Ser Leu Val Arg Asp Gln Leu Arg
1   5   10   15

Thr Phe Gly Tyr Tyr Glu Pro Asp Asn Gly Ile Ser Val Glu Glu Gln
            20   25   30

Lys Ser Glu Ile Val Lys Ile Lys Gly Leu Leu Ser Lys Ala Ser Lys
        35   40   45

Asn Ala Lys Gly Asn Ile Gly Tyr Pro Glu Phe Ile Ile Ser Asn Arg
    50   55   60

Lys Asp Thr Ala Phe Leu Ile Val Val Glu Cys Lys Pro Asp Val Lys
65   70   75   80

Lys His Glu Ser Pro Ser Arg Asp Lys Pro Val Asp Tyr Ala Val Asp
                85   90   95

Gly Val Leu His Tyr Ala Arg His Leu Ala Lys His Tyr Thr Val Leu
            100   105   110

Ala Val Ala Val Ser Gly Thr Thr Ala Ser Ser Met Lys Val Ser Asn
            115   120   125

Phe Leu Val Pro Ala Gly Thr Thr Asp Val Lys Ala Leu Val Asn Glu
    130   135   140

Ser Asn Ser Ser Val Ala Glu Leu Val Pro Tyr Asp Asp Tyr Tyr Arg
145   150   155   160

Leu Ala Ser Tyr Asp Pro Asp Val Ala Gln Lys Arg His Ser Asp Leu
            165   170   175

Leu Ala Phe Ser Arg Glu Leu His Glu Phe Ile Trp Thr Lys Ala Lys
            180   185   190

Page 7

NEB-241-PCT.ST25.txt

Ile Ser Glu Glu Glu Lys Pro Leu Leu Val Ser Gly Thr Leu Ile Ala
        195   200   205

Leu Met Asn Asn Thr Phe Ile Lys Thr Phe Asp Ala Leu Pro Ala Glu
    210   215   220

Asp Val Gln Glu Ala Trp Leu Thr Ala Ile Lys Lys Glu Leu Asp Lys
225   230   235   240

Ala Ser Ile Pro Gln Ala Lys Lys Asp Thr Met Leu Gln Pro Tyr Thr
            245   250   255

Thr Ile Ala Val Asn Pro Asn Leu Gly Lys Pro Asp Ser Lys Thr Ala
            260   265   270

Lys Glu Tyr Pro Asp Gly Val Phe Lys Glu Ile Ile Thr Arg Ile Ala
        275   280   285

Asp Asn Val Trp Pro Tyr Ile Asn Val Phe His Asp Phe Asp Val Val
    290   295   300

Gly Gln Phe Tyr Gly Glu Phe Leu Lys Tyr Thr Ala Gly Asp Lys Lys
305   310   315   320

Ala Leu Gly Ile Val Leu Thr Pro Arg His Val Ala Glu Leu Phe Ser
            325   330   335

Leu Ile Ala Asn Val Asn Pro Lys Ser Lys Val Leu Asp Ile Cys Ala
        340   345   350

Gly Thr Gly Gly Phe Leu Ile Ser Ala Met Gln His Met Leu Lys Lys
        355   360   365

Ala Val Thr Asp Lys Glu Arg Asn Asp Ile Lys Gln Asn Arg Leu Ile
    370   375   380

Gly Ile Glu Asn Asn Pro Lys Met Phe Ala Leu Ala Ala Ser Asn Met
385   390   395   400

Ile Leu Arg Gly Asp Gly Lys Ala Asn Leu His Gln Ala Ser Cys Phe
            405   410   415

Asp Asn Ala Val Ile Ala Ala Val Gln Lys Met Lys Pro Asn Val Gly
            420   425   430

Met Leu Asn Pro Pro Tyr Ser Gln Ser Lys Ser Asp Ala Glu Leu His
                                Page 8

NEB-241-PCT.ST25.txt
435   440   445

Glu Leu Tyr Phe Val Lys Gln Met Leu Asp Thr Leu Thr Pro Gly Gly
    450   455   460

Val Gly Ile Ala Ile Val Pro Met Ser Ser Ala Ile Ser Pro Asn Pro
465   470   475   480

Met Arg Glu Glu Leu Met Lys Tyr His Ser Leu Asp Ala Val Met Ser
            485   490   495

Met Pro Gln Glu Leu Phe Tyr Pro Val Gly Thr Val Thr Cys Val Met
            500   505   510

Val Trp Ile Ala Gly Val Pro His Glu Gln Met Ser Lys Lys Thr Trp
        515   520   525

Phe Gly Tyr Trp Arg Asp Asp Gly Phe Val Lys Thr Lys His Lys Gly
    530   535   540

Arg Ile Asp Met Asn Gly Thr Trp Pro Asp Ile Arg Asp Arg Trp Ile
545   550   555   560

Glu Met Tyr Arg Asn Arg Glu Val His Ala Gly Glu Ser Ile Met Gln
            565   570   575

Lys Val Gly Pro Asp Asp Glu Trp Cys Ala Glu Ala Tyr Met Glu Thr
            580   585   590

Asp Tyr Ser Val Leu Thr Gln Ser Asp Phe Glu Lys Val Val Gln Ser
        595   600   605

Tyr Ala Leu Phe Lys Leu Phe Gly Gln Gly Ser Ser Gln Ser Glu Val
    610   615   620

Lys Gly Ala Thr Asp Ala Glu Asp
625   630

<210> 9
<211> 319
<212> PRT
<213> unknown

<220>
<223> predicted amino acid sequence of the specificity subunit of
      Citrobacter species 2144

<400> 9

Met Pro Lys Ile Asn Asp Leu Phe His Leu Glu Tyr Gly His Ser Leu
                          Page 9

NEB-241-PCT.ST25.txt

1   5   10   15

Glu Leu Asn Arg Leu Glu Gln Ser Thr Ala Ala Asp Ala Val Asn Phe
                20   25   30

Val Gly Arg Ala Ala Arg Asn Asn Gly Val Thr Ala Arg Val Ala Pro
        35   40   45

Pro Pro Asn Leu Lys Pro Ala Ala Ala Gly Thr Ile Ser Val Ala Leu
    50   55   60

Gly Gly Gln Gly Gly Ala Gly Val Ala Phe Leu Gln Pro Arg Pro Tyr
65   70   75   80

Phe Cys Gly Arg Asp Val Met Val Leu Thr Pro Lys Lys His Met Thr
                85   90   95

Asp Gln Glu Lys Leu Trp Trp Val Met Cys Ile Thr Ala Asn Arg Phe
            100   105   110

Arg Phe Gly Phe Gly Arg Gln Ala Asn Arg Thr Leu Lys Asp Leu Asn
        115   120   125

Leu Pro Ala Pro Gln Lys Thr Pro Ser Trp Val His Thr Ala Asn Pro
    130   135   140

Asp Ala Tyr Gln Gly Val Arg Ser Pro Ala Ser Val His Pro Val Gly
145   150   155   160

Thr Leu Ala Val Ser Asn Trp Lys Ala Phe Ile Leu Gln Asp Leu Phe
                165   170   175

Thr Ile Arg Lys Gly Gln Arg Leu Thr Lys Ala Asn Met Leu Pro Gly
            180   185   190

Thr Val Pro Tyr Ile Gly Ala Ser Asp Thr Ser Asn Gly Val Thr Ala
            195   200   205

His Ile Gly Gln Lys Pro Ile His Glu Gly Gly Thr Ile Ser Val Thr
    210   215   220

Tyr Asp Gly Ser Ile Ala Glu Ala Phe Tyr Gln Pro Ser Pro Phe Trp
225   230   235   240

Ala Ser Asp Ala Val Asn Val Leu Tyr Pro Lys Gly Phe Thr Leu Thr
                245   250   255

Page 10

NEB-241-PCT.ST25.txt
Pro Ala Thr Ala Leu Phe Ile Cys Ala Ile Ile Arg Met Glu Lys Tyr
            260   265   270

Arg Phe Asn Tyr Gly Arg Lys Trp His Leu Glu Arg Met Arg Glu Thr
        275   280   285

Val Ile Arg Leu Pro Ala Thr Ala Thr Gly Ala Pro Asp Trp Asp Phe
    290   295   300

Met Glu Lys Tyr Ile Lys Thr Leu Pro Tyr Ser Ser Gln Leu Gln
305   310   315

<210>   10
<211>   23
<212>   DNA
<213>   unknown

<220>
<223>   synthetic

<400>   10
cagagagata acccacaaga ttg   23

<210>   11
<211>   24
<212>   DNA
<213>   unknown

<220>
<223>   synthetic

<400>   11
ccacaagaat tgagttaagc ccaa   24

<210>   12
<211>   25
<212>   DNA
<213>   unknown

<220>
<223>   synthetic

<400>   12
atcgagagat aacccacaag aattg   25

<210>   13
<211>   25
<212>   DNA
<213>   unknown

<220>
<223>   synthetic

<220>
<221>   misc_feature

Page 11

NEB-241-PCT.ST25.txt

```
<222>   (4)..(8)
<223>   n=a,c,t or g

<220>
<221>   misc_feature
<222>   (13)..(25)
<223>   n=a,c,t or g

<400>   13
caannnnngt ggnnnnnnnnn nnnnn                                            25


<210>   14
<211>   12
<212>   DNA
<213>   unknown

<220>
<223>   synthetic


<220>
<221>   misc_feature
<222>   (4)..(8)
<223>   n=a,t,c or g

<400>   14
caannnnngt gg                                                          12


<210>   15
<211>   21
<212>   DNA
<213>   unknown

<220>
<223>   primer

<400>   15
cagttcgatg taacccactc g                                                21


<210>   16
<211>   23
<212>   DNA
<213>   unknown

<220>
<223>   primer

<400>   16
cccgctgacg cgccctgacg ggc                                              23


<210>   17
<211>   43
<212>   DNA
<213>   unknown

<220>
<223>   synthetic

<400>   17
```

Page 12

NEB-241-PCT.ST25.txt
aagtgccacc tgacgtgcaa cctaggtggc acgtctaaga aac   43

<210>   18
<211>   43
<212>   DNA
<213>   unknown

<220>
<223>   synthetic

<400>   18
gtttcttaga cgtgccacct aggttgcacg tcaggtggca ctt   43

<210>   19
<211>   44
<212>   DNA
<213>   unknown

<220>
<223>   synthetic

<400>   19
tggtttctta gacgtgccac ctaggttgca cgtcaggtgg cact   44

<210>   20
<211>   42
<212>   DNA
<213>   unknown

<220>
<223>   synthetic

<400>   20
tgccacctga cgtgcaacct aggtggcacg tctaagaaac ca   42

<210>   21
<211>   43
<212>   DNA
<213>   unknown

<220>
<223>   synthetic

<400>   21
agtgccacct gacgtgcaac ctaggtggca cgtctaagaa acc   43

<210>   22
<211>   43
<212>   DNA
<213>   unknown

<220>
<223>   synthetic

<400>   22
agtgccacct gacgtgccac ccgggttgca cgtctaagaa acc   43

NEB-241-PCT.ST25.txt

```
<210>  23
<211>  18
<212>  DNA
<213>  unknown

<220>
<223>  synthetic


<220>
<221>  misc_feature
<222>  (7)..(7)
<223>  n=a,c,t or g

<400>  23
gcaaccnggg tggcacgt                                              18


<210>  24
<211>  11
<212>  PRT
<213>  unknown

<220>
<223>  synthetic

<400>  24

Val Leu Asp Ile Cys Ala Gly Thr Gly Gly Phe
1               5                   10


<210>  25
<211>  10
<212>  PRT
<213>  unknown

<220>
<223>  synthetic

<400>  25

Ala Asn Glu Arg Lys Thr Glu Glu Leu Val
1               5                   10


<210>  26
<211>  11
<212>  PRT
<213>  unknown

<220>
<223>  synthetic

<400>  26

Met Ala Asn Glu Arg Lys Thr Glu Ser Leu Val
1               5                   10


<210>  27
<211>  10
<212>  PRT
```

NEB-241-PCT.ST25.txt

```
<213>   unknown

<220>
<223>   synthetic

<400>   27

Pro Lys Ile Asn Asp Leu Phe His Leu Glu
1               5                   10


<210>   28
<211>   11
<212>   PRT
<213>   unknown

<220>
<223>   synthetic

<400>   28

Met Pro Lys Ile Asn Asp Leu Phe His Leu Glu
1               5                   10


<210>   29
<211>   12
<212>   DNA
<213>   unknown

<220>
<223>   synthetic


<220>
<221>   misc_feature
<222>   (5)..(8)
<223>   n=a,c,t or g

<220>
<221>   misc_feature
<222>   (9)..(9)
<223>   n is a, c, g, or t

<400>   29
ccacnnnnnt tg                                              12


<210>   30
<211>   36
<212>   DNA
<213>   unknown

<220>
<223>   synthetic


<220>
<221>   misc_feature
<222>   (1)..(11)
<223>   n=a,c,t or g

<220>
```

NEB-241-PCT.ST25.txt

```
<221>   misc_feature
<222>   (15)..(19)
<223>   n=a,c,t or g

<220>
<221>   misc_feature
<222>   (24)..(36)
<223>   n=a,c,t or g

<400>   30
nnnnnnnnnn ncaannnnng tggnnnnnnnn nnnnnn                              36


<210>   31
<211>   34
<212>   DNA
<213>   unknown

<220>
<223>   synthetic


<220>
<221>   misc_feature
<222>   (1)..(10)
<223>   n=a,c,g or t

<220>
<221>   misc_feature
<222>   (14)..(18)
<223>   n=a,c,g or t

<220>
<221>   misc_feature
<222>   (23)..(34)
<223>   n=a,c,g or t

<400>   31
nnnnnnnnnn caannnnngt ggnnnnnnnn nnnn                                34


<210>   32
<211>   35
<212>   DNA
<213>   unknown

<220>
<223>   synthetic


<220>
<221>   misc_feature
<222>   (1)..(10)
<223>   n=a,c,t or g

<220>
<221>   misc_feature
<222>   (14)..(18)
<223>   n=a,c,t or g

<220>
<221>   misc_feature
<222>   (23)..(35)
```

NEB-241-PCT.ST25.txt

```
<223>   n=a,c,t or g

<400>   32
nnnnnnnnnn caannnnngt ggnnnnnnnn nnnnn                          35


<210>   33
<211>   35
<212>   DNA
<213>   unknown

<220>
<223>   synthetic


<220>
<221>   misc_feature
<222>   (1)..(11)
<223>   n=a,c,t or g

<220>
<221>   misc_feature
<222>   (15)..(19)
<223>   n=a,c,t or g

<220>
<221>   misc_feature
<222>   (24)..(35)
<223>   n=a,c,t or g

<400>   33
nnnnnnnnnn ncaannnnng tggnnnnnnnn nnnnn                         35


<210>   34
<211>   13
<212>   DNA
<213>   unknown

<220>
<223>   synthetic


<220>
<221>   misc_feature
<222>   (4)..(9)
<223>   n=a,c,t or g

<400>   34
caannnnnng tgg                                                 13


<210>   35
<211>   11
<212>   DNA
<213>   unknown

<220>
<223>   synthetic


<220>
<221>   misc_feature
```

Page 17

NEB-241-PCT.ST25.txt

```
<222>  (4)..(7)
<223>  n=a,c,g or t

<400>  35
caannnngtg g                                                          11


<210>  36
<211>  11
<212>  DNA
<213>  unknown

<220>
<223>  synthetic


<220>
<221>  misc_feature
<222>  (4)..(8)
<223>  n=a,c,t or g

<400>  36
caannnnnntt g                                                         11


<210>  37
<211>  13
<212>  DNA
<213>  unknown

<220>
<223>  synthetic


<220>
<221>  misc_feature
<222>  (5)..(9)
<223>  n=a,c,t or g

<400>  37
ccacnnnnng tgg                                                        13


<210>  38
<211>  12
<212>  DNA
<213>  unknown

<220>
<223>  synthetic


<220>
<221>  misc_feature
<222>  (4)..(4)
<223>  n is a, c, g, or t

<220>
<221>  misc_feature
<222>  (5)..(8)
<223>  n=a,c,t or g

<220>
```

NEB-241-PCT.ST25.txt

```
<221>  misc_feature
<222>  (12)..(12)
<223>  r=a or g

<400>  38
caannnnngt gr                                                        12


<210>  39
<211>  11
<212>  DNA
<213>  unknown

<220>
<223>  synthetic


<220>
<221>  misc_feature
<222>  (4)..(8)
<223>  n=a,c,t or g

<400>  39
caannnnngt g                                                         11


<210>  40
<211>  11
<212>  DNA
<213>  unknown

<220>
<223>  synthetic


<220>
<221>  misc_feature
<222>  (4)..(8)
<223>  n=a,c,t or g

<400>  40
cgannnnntg c                                                         11


<210>  41
<211>  11
<212>  DNA
<213>  unknown

<220>
<223>  synthetic


<220>
<221>  misc_feature
<222>  (4)..(8)
<223>  n=a,c,t or g

<400>  41
caannnnntg c                                                         11


<210>  42
```

Page 19

NEB-241-PCT.ST25.txt

```
<211>   12
<212>   DNA
<213>   unknown

<220>
<223>   synthetic


<220>
<221>   misc_feature
<222>   (4)..(8)
<223>   n=a,c,t or g

<400>   42
gcannnnngt gg                                                              12


<210>   43
<211>   12
<212>   DNA
<213>   Bacillus coagulans


<220>
<221>   misc_feature
<222>   (4)..(9)
<223>   n=a,c,t or g

<400>   43
cgannnnnnt gc                                                              12


<210>   44
<211>   11
<212>   DNA
<213>   Bacillus sphaericus


<220>
<221>   misc_feature
<222>   (3)..(6)
<223>   n=a,c,t or g

<220>
<221>   misc_feature
<222>   (10)..(10)
<223>   y=c or t

<400>   44
acnnnngtay c                                                               11


<210>   45
<211>   11
<212>   DNA
<213>   Bacillus pumilus


<220>
<221>   misc_feature
<222>   (4)..(8)
<223>   n=a,c,g or t
```

Page 20

NEB-241-PCT.ST25.txt

```
<400>  45
gagnnnnnct c                                                      11


<210>  46
<211>  11
<212>  DNA
<213>  Campylobacter jejuni


<220>
<221>  misc_feature
<222>  (4)..(9)
<223>  n=a, c, t or g

<400>  46
ccannnnnng t                                                      11


<210>  47
<211>  13
<212>  DNA
<213>  Acinetobacter lwoffii


<220>
<221>  misc_feature
<222>  (5)..(10)
<223>  n=a, c, t or g

<400>  47
gaacnnnnnn tcc                                                    13


<210>  48
<211>  11
<212>  DNA
<213>  Haemophilus aegyptius


<220>
<221>  misc_feature
<222>  (3)..(3)
<223>  y=c or t

<220>
<221>  misc_feature
<222>  (4)..(8)
<223>  n=a,c,t or g

<220>
<221>  misc_feature
<222>  (9)..(9)
<223>  r=a or g

<400>  48
gaynnnnnrt c                                                      11


<210>  49
<211>  11
<212>  DNA
<213>  Bacillus stearothermophilus
```

Page 21

NEB-241-PCT.ST25.txt

```
<220>
<221>  misc_feature
<222>  (3)..(7)
<223>  n=a,c, t or g

<400>  49                                                    11
acnnnnnctc c
```